

**REMARKS**

Claims 17-34, 37, and 39-56 are pending in the application. Claims 17, 18, and 31 are amended for clarification, and claim 20 is amended to cancel an extraneous word (“said”). Applicant requests reconsideration and allowance in view of the following remarks.

**Improper Finality of the Office Action/ Enterability of the Amendments**

The outstanding Office Action is not properly Final because the Examiner has raised new grounds of rejection not necessitated by Applicant's amendment. See M.P.E.P. § 706.07(a) (“Under present practice, second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is neither necessitated by applicant's amendment of the claims, nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p).”) In this case, claims 22-30 and 42-50 previously were indicated to be directed to allowable subject matter in the July 25, 2006 Office Action, but those claims are now rejected over new art even though they were not amended. Furthermore, all claims are now rejected under 35 U.S.C. § 112, second paragraph – the rejection is traversed below – on the basis that the terms “means for reproducing” and “reproducing means” “lack clarity and therefore render the claims indefinite.” That language, however, has been present in the claims since they were originally filed, and there already have been three Actions on the merits, none of which has objected to that language previously.<sup>1</sup> Therefore, Applicant's amendments did not necessitate these new rejections, and making the present action Final was improper. Accordingly, Applicant requests that the finality of the rejection be withdrawn and that the present amendments be entered and considered.

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<sup>1</sup> Applicant reminds the Examiner of the admonition against piecemeal examination set forth at M.P.E.P. § 707.07(g).

### Rejection Under 35 U.S.C. § 112

As noted above, all claims are rejected under 35 U.S.C. § 112, second paragraph, on the basis that the terms “means for reproducing” and “reproducing means” “lack clarity and therefore render the claims indefinite.” Applicant traverses the rejection.

The subject language is means-plus-function language. As M.P.E.P. § 2181 (III) explains with respect to such limitations (emphasis added), “If the corresponding structure, material or acts are described in the specification in specific terms (e.g., an emitter-coupled voltage comparator) and one skilled in the art could identify the structure, material or acts from that description, then the requirements of 35 U.S.C. 112, second and sixth paragraphs and are satisfied. See *Atmel*, 198 F.3d at 1382, 53 USPQ2d 1231.” In the present case, the specification identifies camera (3) as an exemplary reproduction means. See, for example, paragraph 2 (“The reproduction means can consist of, for example, a video camera, and in particular, those of the CCD (Charge Couple Device) type”) and paragraph 29 (“The camera 3 suitably consists of a miniature video camera, such as a CCD or CMOS (Charge Metal Oxide Conductor) camera”), as presently amended. Accordingly, the standard set forth in the M.P.E.P. is clearly met, and Applicant requests that the rejection be withdrawn.

### Rejection Under 35 U.S.C. § 103

Claims 17-34, 37, and 39-56 (i.e., all pending claims) are rejected under 35 U.S.C. § 103(a) based on Kovacevic, U.S. 5,481,085, in view of Sheaffer et al., U.S. 6,084,205. According to the Office Action, Kovacevic discloses all features recited in the claims except for a band-pass filter that filters around an ultraviolet wavelength. However, according to the Office Action, that feature is disclosed in Sheaffer. Therefore, according to the Office Action, it would have been obvious to incorporate a band-pass filter as per Sheaffer into Kovacevic “to filter out infrared radiations out [sic] from the radiations emitted from the weld pool and only to transmit the wavelengths corresponding to the ultraviolet portion so that the weld pool boundary can be differentiated effectively which will enable the weld parameters to be measured effectively, and the control of the welding parameters be precise and consequently a high quality weld be achieved[.]” Applicant traverses this rejection for several reasons.

First, Kovacevic actually teaches away from such a modification. According to Kovacevic, laser light is projected through an optical diffuser 16 (e.g., a pane of frosted glass) and then a grid 18 onto the surface of the weld pool. See, for example, Kovacevic's Abstract; column 5, lines 31-56; and Figure 1. Camera 22 acquires an image of the pattern of stripes, and the shape of the surface of the weld pool can be determined by evaluating any deformation in the pattern of the stripes. See column 6, lines 33-59. Significantly, Kovacevic specifically teaches that the full spectral reflectance of the pattern of lines should be detected by the camera. See column 4, lines 17-21 ("It should further be appreciated that the diffusing of the illuminating light by projection through the frosted glass functions in combination with detection of the full spectral reflectance to allow the reflected pattern of stripes to be fully detected"), emphasis added, and column 7, lines 21-26 ("since diffused light is utilized during illumination of the weld pool surface and the full reflectance is detected, it should be appreciated that a relatively lower intensity laser light source may be utilized to provide an acceptable acquired image than is possible with any such prior art approach to this problem"), emphasis added. Accordingly, Kovacevic teaches away from the modification proposed by the Examiner, which would preclude the full spectral reflectance of the pattern of lines from being detected.

Second, there would have been no reason (but for hindsight) to make the proffered modification. That is because Kovacevic already relies on sufficiently high intensity of the light source and particular relative angular orientation of the illumination and detection devices for the pattern of lines to be discernible over the light given off by the welding arc. See column 3, lines 54-55 ("Preferably, the laser light source has an intensity greater than that of the welding arc"); column 5, line 55 through column 6, line 5 ("This spacial orientation of the directions of illumination and detection relative to the welding arc A serves to allow detection of the full spectral reflection coming from the weld pool surface S while minimizing the interference that might otherwise be produced by the high intensity light of the arc during the welding operation"); and column 7, lines 3-9 ("Advantageously, the pulsing [of the laser] allows a higher intensity light to be utilized at peak power while minimizing the overall average energy requirements in its production. Such a high intensity pulse floods the field and effectively

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overcomes the intensity of that light produced by the welding arc thereby increasing the signal image of the detector”).

Third, independent claim 17 has been amended slightly to clarify that the computer means process a reproduction image of the welding area. (Claim 31, which depends from independent claim 20, has been similarly clarified.) Similarly, independent claims 20 and 56 specify that the welding area is reproduced. In Kovacevic, in contrast, no reproduction image is produced or analyzed, nor is the welding area reproduced. Rather, all that is produced and evaluated in Kovacevic is the limited image of the pattern of lines reflected off of the surface of the weld pool, which is not a reproduction. See column 6, lines 37-42 (“In this case, the virtual image of the light pattern, specularly reflected from the weld pool surface, is a map of deformed stripes (note FIG. 3). The acquired image contains only a specularly reflected light pattern from the molten pool surface S.”), emphasis added. Therefore, the proposed combination would not even yield the invention recited in claims 17, 20, and 26, and those that depend from them.

For these reasons, Applicant traverses the rejection and requests that it be withdrawn.

In view of the foregoing, Applicant submits that all claims are in condition for allowance, and timely Notice to that effect is respectfully requested.

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The undersigned representative requests any extension of time that may be deemed necessary to further the prosecution of this application.

The undersigned representative authorizes the Commissioner to charge any additional fees under 37 C.F.R. 1.16 or 1.17 that may be required, or credit any overpayment, to Deposit Account No. 14-1437, Order No. 7589.204.PCUS00.

In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner should directly contact the undersigned by phone to further the discussion.

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